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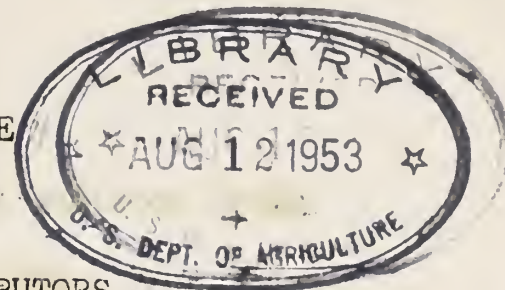
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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH ADMINISTRATION
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
WASHINGTON 25, D. C.



EQ-53, INFORMATION FOR FORMULATORS AND DISTRIBUTORS

The Bureau of Entomology and Plant Quarantine has developed a simple method for the housewife to use in treating washable woolens in the home to protect them against feeding damage by clothes moths and carpet beetles. The treatment requires the use of a special DDT emulsifiable concentrate which we have designated as EQ-53. This treatment is recommended and discussed in the United States Department of Agriculture Home and Garden Bulletin No. 24; "Clothes Moths and Carpet Beetles - How to Combat Them."

HOW EQ-53 WORKS

EQ-53 is an emulsifiable concentrate of DDT, with the proper selection of emulsifier and solvent. It is added directly to the water in which woolens are washed and provides a mothproofing treatment at the same time the woolens are being laundered. A DDT emulsion is formed when a small amount of the concentrate is added to the wash water. There is a selective pickup of DDT from the emulsion by the wool and the deposit of DDT in the wool is much greater than would be anticipated on the basis of theoretical calculations. This has been proved by experimental tests and a technical paper has been published giving some of the experimental data relating to the development of EQ-53. The title of the paper is "Tests With DDT Nonionic Emulsion for Mothproofing Washable Woolens," by Hamilton Laudani, Circular E-858, May 1953. A copy of this publication may be obtained upon request from the Bureau of Entomology and Plant Quarantine, United States Department of Agriculture, Washington 25, D. C.

MANUFACTURE OF EQ-53

The Bureau of Entomology and Plant Quarantine has developed the formula for EQ-53 and has released it to industry so the product can be manufactured and made available to the public. A permit or license from the United States Department of Agriculture is not required to manufacture this product. Formulators of EQ-53 should keep in mind, however, that all DDT compositions are covered by U. S. Reissue Patent No. 22,922. Information concerning this patent may be obtained from Geigy Company, Inc., 89 Barclay Street, New York 8, New York.

An attempt is being made to build up a file of the various brands of EQ-53. If you begin production of EQ-53, we would appreciate receiving the brand name of your product and if available, a copy of your label so your firm can be added to our list. Please address your reply to L. S. Henderson at the address shown above.

FORMULA FOR EQ-53

EQ-53 contains the following ingredients by weight:

- 25% - DDT, technical grade.
- 10% - Nonionic emulsifier of the polyhydric alcohol, or alcohol ether type.
- 65% - Aromatic hydrocarbon solvent with specifications listed below.

Solvent specifications:

1. Flash point - 105° F., minimum (Tag Closed Cup)
2. Specific gravity - approximately 0.87
3. Boiling range:
 - (a) Initial boiling point - 300° F., minimum
 - (b) Percent at 330° F. - 50, minimum
 - (c) Percent at 350° F. - 90, minimum
 - (d) Final boiling point - 370° F., maximum
4. Color - 21, minimum (Saybolt chromometer), water white
5. DDT solubility - must dissolve at least 35%, W/W, technical DDT at 20° C.
6. Odor - although no requirement is established, it should be recognized that a strong odor is objectionable to the housewife and will create the impression of an inferior or undesirable product. There should be no residual solvent odor in the woolens after they are dry.

The type of emulsifier and solvent used in EQ-53 has been carefully picked to insure (1) the proper functioning of the selective pickup of DDT from the emulsion by the wool, (2) the highest possible safety to the user, and (3) lack of injury to the woolens being treated. A list of some of the sources for ingredients of EQ-53 is attached.

LABELING

The Bureau of Entomology and Plant Quarantine has made preliminary arrangements with the Insecticide Division of the Production and Marketing Administration, United States Department of Agriculture, with regard to the labeling of EQ-53 products. This will assist manufacturers when they submit their labels for acceptance and should help to speed up registration. EQ-53 will come under the jurisdiction of Federal and State laws governing the sale of insecticides. In submitting a request for Federal registration the manufacturer should include a statement giving the exact name and the percentage by weight of all ingredients. Any preparation sold as EQ-53 must comply with the specifications previously listed. An example of a type of label that will be acceptable to PMA as complying with the requirements of the Federal Insecticide Act is given on the following page.

842313
YOUR BRAND

EQ-53

Mothproof for Washable Woolens

- - -

Active ingredient -

Dichloro diphenyl trichloroethane - 25%

Inert ingredients -

- 75%

PRECAUTIONS

Contact of this concentrate with skin can cause toxic symptoms and should be avoided. In case it is spilled on the skin, wash with soap and water. Do not use on household pets or humans. Harmful if swallowed. Keep out of the reach of children, and do not store where it will be mistaken for a food item. Infant's blankets and infant's sweaters treated with this material for storage should be dry-cleaned before being placed in use. Do not pour, spill, or store near fire or open flame.

DIRECTIONS FOR USE

In Washing Machines - automatic or non-automatic.

1. Weigh or estimate weight of dry woolens to be washed and treated.
2. Start normal washing procedure used for woolens. After the water and soap are in the machine, add 1 tablespoonful of EQ-53 for each pound of dry woolens.
3. Proceed with washing, rinsing, and drying as usual.
4. Wash hands with soap and water after handling wet treated material.
5. Drain the water containing EQ-53 from machines containing rubber agitators soon after use to prevent possible injury to the rubber.

Treating Hand-Washed Woolens.

1. Weigh or estimate weight of woolens to be washed.
2. Wash woolens as usual.
3. Add to first rinse water 1 tablespoonful of EQ-53 for each pound of dry wool. Soak woolens and stir for 3 to 5 minutes with paddle or by hand, wearing rubber gloves.
4. Follow with the normal rinsing and drying procedure.
5. Wash hands with soap and water after handling wet treated material.

Treating Clean Woolens.

Follow the directions given above for machine or hand washing but leave out the soap.

When to Treat Again.

Woolens treated with EQ-53 as directed above will be protected from clothes moth and carpet beetle attack during storage for at least one year. Washing or dry-cleaning removes the DDT and treatment should be repeated with each cleaning or washing.

Net Contents - (4 oz., 8 oz., 1 pt., etc.)

Name and Address of Manufacturer

Tests indicate that DDT will not crystallize out of this formulation at temperatures above 20° F. For protection, you may wish to place a statement on your label that this product should not be exposed to extreme cold. In the event that the solution becomes turbid or that crystals separate, the product should be allowed to warm to room temperature, with occasional shaking, before use.

PACKAGING

In view of the possible deterioration of emulsifiable concentrates such as the above in certain types of metal containers, it is suggested that the product be packaged in glass.

CAN THE FORMULA OF EQ-53 BE VARIED?

Since our original release of December 15, 1952, we have received a number of inquiries as to whether a manufacturer could alter the formula of EQ-53. Others have asked whether they could label as EQ-53 a similar DDT emulsifiable concentrate which they are already producing. We are fully sympathetic with such requests and are aware of many of the reasons why variations might be desirable from the standpoint of certain individual firms. We are maintaining the attitude, however, that if a product is to be labeled as EQ-53 it must comply with the formula as given in this statement. If alterations were permitted there would soon be such a variety of formulations on the market that EQ-53 would lose its identity. Harmful or undesirable ingredients might also find their way into the product.

Another common question has been whether in the interest of economy the amount of emulsifier can be reduced below 10 percent. Suppliers of emulsifiers have also told us that certain brands of emulsifiers will be effective at concentrations less than 10 percent. We know that under most conditions of use there will be an excess of emulsifier at the 10-percent concentration. This provides an intentional margin of safety to insure effective treatment under a wide range of conditions, especially when EQ-53 is applied in rinse water that may be very hard or excessively alkaline. If later work indicates the possibility of maintaining an effective product with less emulsifier, a modification will be considered after the proper criterion for emulsion stability has been established.

It may be found that mixtures of nonionic and anionic emulsifiers will perform satisfactorily. These cannot be accepted, however, until more is learned about their possible use in EQ-53.

